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CANMET

Canada Centre for Mineral and Energy Technology | Centre canadien de la technologie des minéraux et de l'énergie

ISO/TC 183 MEETING
SYDNEY, AUSTRALIA 1986-04-27 TO 1986-05-02
REPORT OF WG 10 CONVENER

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(For submission to the Standards Council of Canada)

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ISO/TC 183 MEETING
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REPORT OF WG 10 CONVENER

by

R. Sutarno*

ABSTRACT

This report covers the ISO/TC 183 (ISO Technical Committee on Copper, Lead and Zinc Ores and Concentrates) meeting held in Sydney, Australia 1986-04-27 to 1986-05-02. It covers only aspects dealing with WG 10 (Working Group on Statistical Evaluation of Test Programmes) and WG 9 (Sampling). Other aspects of the meeting will be reported by the leader of the Canadian delegation.

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RÉUNION ISO-GT 183
SYDNEY, AUSTRALIE, DU 27 avril 1986 AU 2 mai 1986
RAPPORT DE LA RÉUNION DU GT 10

par

R. Sutarno*

RÉSUMÉ

Le présent rapport assure le compte rendu de la réunion ISO-GT 183 (Comité technique de l'ISO sur le cuivre, le plomb et les minerais et concentrés de zinc) tenue à Sydney, Australie, du 27 avril 1986 au 2 mai 1986. Le rapport ne porte que sur les aspects intéressant le Groupe de travail 10 (Groupe de travail sur l'évaluation statistique des programmes d'essai) et le Groupe de travail 9, (Échantillonnage). D'autres facettes de la réunion seront présentées par le Chef de la délégation canadienne.

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ISO/TC 183

ISO Technical Committee on Copper, Lead and Zinc Ores and Concentrates

Meeting, Sydney, Australia 1986-04-27 to 1986-05-02

Report of WG 10 Convener

ISO/TC 183/WG 10 is a working group within ISO/TC 183 that is assigned to design experiment and evaluate statistically and take custody of the experimental results for international tests conducted by all the working groups (except WG 9 - Sampling) within the technical committee. For this reason WG 10 is involved with the activities of these other working groups.

At this meeting, in addition to reporting the results of the statistical evaluation of international tests conducted by other working groups (WG 1 to 6), WG 10 also held a meeting with the purpose of finding an agreed procedure for statistical evaluation of the analytical data as well as establishing a working group operating procedure for use by all working groups within TC 183.

This report covers only those activities relevant to WG 10 and to a certain extent WG 9; other aspects of the technical committee meeting will be reported by the leader of the Canadian delegation.

1. ISO/TC 183/WG 10 Meeting

Two meetings were held to discuss problems concerning statistical evaluation of data generated by the TC 183. The first meeting was held on April 27, 1986 afternoon. Because the general nature of the subject matter, this meeting was also attended by other delegates that are not officially members of WG 10. The attendance list and agenda of this meeting are appended in this report. It was decided that a meeting between conveners of WG 1 to 8 and 10 be held at the end of the TC meeting to discuss matters that could not be decided without information that would be available only after various working group meetings. This conveners' meeting was held on May 1 evening. The decisions made at these two meeting are:

a. Working Group Operating Procedures

It was agreed that TC 183 will use the Working Group Operating Procedures of TC 102 described in document ISO/TC 102 Technical Committee Report TCR 4. This procedure is based on all working groups operating on a two-year cycle. The following are the modifications made:

(1) Test samples: TC 183 working groups will use a two-bottle sample system (each laboratory will perform analyses in duplicate on each of the two bottles of test sample) for both international tests stage A and stage B.

(2) The interpretation of the term "independent replication" used within TC 183 is considered to be method dependent and it is the responsibility of the convener concerned.

(3) The working group schedule will be the same for both stages A and B; both are based on a two-year cycle.

b. Procedure for Statistical Evaluation of Analytical Data

(1) The working group will use the same procedure for statistical evaluation of analytical data used by TC 102/SC 2, described in ISO/TC 102 Technical Report TCR 5 with minor modifications.

(2) The precision of the analytical methods estimated by the above procedure will be expressed in terms of repeatability standard deviation (sr), between-laboratories standard deviation (sL), repeatability (r) and permissible tolerance (P). They are to be presented both in the form of tables and regression equations.

(3) Tests for outliers and levels of significance. At present the use of Cochran's and Dixon's combination test for this purpose will be continued until such time when Grubbs' test will be included in ISO 5725. At that time the Grubbs' test will be used in place of Dixon's. Unlike TC 102, where all tests for outliers are performed at 5% levels of significance, TC 183 will use two levels of significances: 5% for comparison of methods and 1% for the estimation of final precisions.

(4) The Converners will advise the WG 10 Convener if they wish to delete some of the information currently listed in the computer output of the statistician's reports.

(5) Laboratory results will be identified by country of origin i.e. JP 1 for results reported by Japanese laboratory No. 1.

It was agreed that the Secretariat of TC 183 will circulate ISO/TC 102 TCR 4 and 5 together with the French comments on these TCRs to the members of TC 183 for comment.

c. Meeting of WG 1 to 8

During the past period (1984-1986), six working groups (WG 1 to 6) conducted international tests. The data resulting from these tests have been statistically evaluated at CANMET. The results of these evaluations have been reported to the conveners of working groups concerned, and are appended to their reports. These data are now stored in a data base system in EMR Computer Services Centre facility. The experience of conducting these tests has made the committee more aware of the importance of proper scheduling of the working group operations. Some of the data arrived too late for the delegates to properly digest the information. This shortcoming should be avoided for the next period when the newly agreed schedule will be put into practice.

During the coming period (1986-1988) nine international tests are planned. They are listed in Table 1.

2. ISO/TC 183/WG 9 (Sampling) Meeting, April 28 and 29 Morning

2.1 Discussion on Sampling Procedures

Three sampling procedures were proposed:

(1) Japanese proposal, based on JIS standard, similar with those used for sampling iron ores (Document ISO/TC 183/N 106).

(2) French proposal based on sampling theory by P. Gy (Document ISO/TC 183/N 145).

(3) Australian proposasl, which is somewhere in between the Japanese and French proposals (Document ISO/TC 183/N 27).

Each of the above documents has its own merit; the Japanese document is the most practical but is short on theory while the French document has more theory but may be difficult to be put in practice. The Australian document

tries to be in between the two. After lengthy discussion, it was agreed that the working group members will study all three documents and send their comments to the convener by September 30, 1986. It was also agreed that in commenting on these documents, members are requested to take into account the decision made at this meeting, which are basically on the type of sampling document the technical committee would like to have. The detailed results of this decision is appended in this report.

2.2 Discussion on Moisture in Bulk Materials

Moisture content in bulk materials is one of the most important characteristics to be determined, since it will be used to correct all other characteristic values. After lengthy discussion the working group will combine the Japanese and Australian proposals, taking into account the decision made at this meeting. Members are requested to comment by September 30, 1986.

2.3 Other Topics

2.3.1 Sample Preparation

It was agreed that the standard for sample preparation should enable the users to analyse their sampling preparation circuit to find the component that contributes most to the preparation error. Members are requested to comment on Japanese and Australian proposals on sample preparation by September 30, 1986.

2.3.2 Sampling Precision, Bias and Quality Variation

It was agreed that the convener will prepare separate documents on methods for determination of sampling precision, bias and quality variation of the materials. These documents will be circulated to ISO/TC 183 members for comment.

In view of the nature and the amount of work, it was agreed that WG 9 will meet in approximately one year, the location will be decided at a later date.

Items to be acted on immediately:

Approval by the Standards Council of Canada to host the next ISO/TC 183 meeting (expected to be in May 1988) in Canada.

All comments due by September 30, 1986.

Next Meetings

ISO/TC 183/WG 9 - 1987, Place to be determined

ISO/TC 183/WGs - May 1988, Canada (Subject to SCC approval)

Conclusion

The six-day meeting has been very productive. A substantial amount of work has been put in by member countries in preparation of this meeting. This is shown in the quantity of analytical data generated during the past period. The work has been progressing accordingly. In general the delegates have been cooperative. The only possible improvement will be better scheduling of working group operations and better definition of the responsibility of each participant. This will enable all concerned to schedule their laboratory work. The amount of work expected for the coming period will be heavier. Nine international tests are planned. This will require considerable commitment from Canadian member laboratories.

The centralized data processing in CANMET has been well received by the committee. This data base can also be used as a source of information by the analytical community in Canada. The members of the Canadian delegation have found that this meeting has been both interesting and educational, and have agreed that it is worth while to offer to host the next meeting in Canada (subject of course to the approval by the Standards Council of Canada).

It is recommended that Canada continue to support the work of ISO/TC 183.

Table 1
International Tests Planned by ISO/TC 183/WG 1 to 8
1986-1988

WG	Element	Stage	Method	Convener
WG 1	Au & As in Cu Conc.	B	Fire assay	J. Van Der Linden Papua New Guinea
WG 1	Au & As in Cu Conc.	A	Alternative*	J. Van Der Linden Papua New Guinea
WG 2	As in Cu Conc.	B	Fire assay	K. Daniel Australia
WG 3	Cu in Cu Conc.	B	Titrimetry	J. Chie Australia
WG 4	Cu in Cu Conc.	B	Electrogravimetry	H-W Haase Germany
WG 5	Pb in Pb Conc.	B	Titrimetry	D. Sinclair Australia
WG 6	Zn in Zn Conc.	B	Japanese N9	J. Bastin Belgium
WG 7	Au & As in Pb Conc.	A	To be determined	D. Sinclair Australia
WG 8	Au & As in Zn Conc.	A	To be determined	T. Smith Australia

*Convener will develop the method based on Chinese and German proposals

APPENDIX

ISO/TC 183/WG 10

COPPER, LEAD AND ZINC ORES AND CONCENTRATES
Working Group 10 - Statistical Evaluation of Test Programmes

1st. Meeting

Place: SAA, North Sydney, Australia

Date : 1986 - 04 - 27

Time : 2 PM

DRAFT AGENDA

1. Working group operating procedures:

   a. Responsibility of participants
   b. Sample handling
   c. Definition of "Independent determination"
   d. Time table (Working schedule)
   e. Other topics

2. Procedure for statistical evaluation of analytical data resulting from international trials:

   a. Main procedure, i.e. mathematical model (Re: ISO 5725)
   b. Tests for outliers i.e. Cochran's, Dixon's, Grubb's tests and levels of significance (1% or 5%)
   c. Expression of estimated precisions
   d. Output of computer programme i.e. information required by WG's members
   e. Laboratory identity i.e. Lab n or GER n, AU n etc.
   f. Other topics

3. Uses of precision data:

   a. Doc. ISO/TC 69/SC 6 N97 and N104
   b. Independent replication in routine application of the standards
   c. Other topics

4. Any other business.

ATTENDANCE LIST
LISTE DES DELEGUES PRESENTS

ISO/TC 183/WG 10 - COPPER, LEAD AND ZINC ORES AND CONCENTRATES/STATISTICAL EVALUATION OF TEST PROGRAMMES	Head of delegation Porte-parole	Meeting Place Lieu de reunion	NORTH SYDNEY (AUSTRALIA) 1986-04-27
Name Nom		Country Pays	
MR D J SEMPLE	X	CANADA	
MR R E BYRNE		AUSTRALIA	
M. P CARLIETTA		FRANCE	
MR J M CHIE		AUSTRALIA	
DR E M SACRIS		PHILIPPINES	
MR LING GAO SUN		CHINA	
MRS RUI YING ZHU		CHINA	
DR H W HAASE		GERMANY	
MR P BIRNBAUM		PAPUA NEW GUINEA	
MR J VAN DER LINDEN		PAPUA NEW GUINEA	
MME D GUIDOIN		FRANCE	
MR J L RUIZ		SPAIN	
DR R SUTARNO		CANADA	
MR E S PILKINGTON		AUSTRALIA	
MR D SINCLAIR		AUSTRALIA	

STANDARDS ASSOCIATION OF AUSTRALIA

ISO/TC 183/WG 9 N 7 E

April 1986

I S O

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

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ISO/TC 183/WG 9 - SAMPLING

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FIRST MEETING DECISIONS

(April 28 and 29 (morning), 1986)

SAMPLING

1. Practical or Theoretical Document (Educational)?

Working Group 9 agreed that the draft on sampling should be a practical document but it was also necessary to have a substantial amount of theory in annexes to justify the particular sampling approach.

2. What Documents?

Working Group 9 agreed that separate drafts for sampling from stationary situations and sampling from moving streams should be prepared. These would be restricted to consideration of concentrates only at this stage.

3. Quality Characteristics or Mass of Metal?

Working Group 9 agreed to prepare a sampling draft which will incorporate the submissions from France, Japan and Australia. This draft will determine the quality characteristics for metal content and moisture content.

Working Group 9 also recommended that a separate document be prepared which would be a guide on how to use the various standards for copper, lead and zinc concentrates. This would cover how to determine the mass of metal and its variance in the lot which would take into account the determination of weight, the determination of moisture and the determination of metal content.

4. Increment Mass or Gross Sample Mass?

Working Group 9 was generally in favour of following the French proposal for specifying sample mass retained at any stage and the specification of the number of increments. It was also agreed that in the case of moisture determinations the Working Group should give consideration to specifying the limits of increment and sample mass to preserve the integrity of the sample.

5. How do you Evaluate Quality Variation?

Working Group 9 agreed that quality variation should be based on σ_w.

6. σ_{spm} or Calculation of Errors at Every Stage?

Working Group 9 agreed to follow the French proposal as the main basis of the document i.e. errors should be calculated for each sampling stage. The draft would also explain either in the main text or an annex how these intermediate errors correspond to σ_p.

7. Timetable.

Working Group 9 agreed that the members of ISO/TC 183 should examine the Australian, French and Japanese proposals for sampling copper, lead and zinc concentrates, and provide written comments by September 30, 1986. The Convener will then prepare a combined sampling document taking into account Decisions 1 to 6 made at the meeting on April 28, 1986, for future discussion by Working Group 9. This document will also include consideration of a shortened version of the French proposal to be provided by September 30, 1986.

MOISTURE IN BULK MATERIALS

1. Mass of moisture samples?

Working Group 9 agreed that in a draft method for moisture determination the mass of the sample should be 1 kg.

2. Predrying?

Working Group 9 agreed to include a procedure for predrying of wet or sticky samples similar to that of Annex A of ISO/TC 183 N 107 E.

3. Dealing with Agglomerates?

The Working Group decided that the breaking up of agglomerates by screening would not be permitted.

4. Hot or cold weighing?

Agreement was reached that the method would refer to hot weighing as it was considered to be impractical to cool a 1 kg sample without the risk of moisture absorption.

5. Layer thickness?

The Working Group agreed that the layer thickness should be not greater than 30 mm.

6. Ventilation of oven?

Working Group 9 agreed the oven air should be changed during the moisture determination although no specific rate was decided. The Working Group was generally in favour of the expression used in ISO/TC 183 N 125 E.

7. Drying times?

It was agreed that an initial drying period of 16 h followed by additional drying periods of 4 h until constant mass is achieved, should be specified. The initial drying period may be altered from practical experience with different concentrates.

8. Crumbling of samples prior toadditional drying?

The Working Group agreed that any crusts or cakes which formed after initial drying should be broken up to enable easier release of moisture.

9. Agreement of duplicates?

It was agreed to retain 0.2 percent moisture absolute. Canada offered to provide an alternative method which will be forwarded to the Convener for consideration.

10. Methods of taking moisture samples?

The Working Group agreed that rotary sample division spearing, increment division and elongated ribbon division are permissible for preparation of moisture samples. The elongated ribbon division method will be included in the draft for sample preparation.

11. Oxidation/decomposition?

It was agreed that any members of ISO/TC 183 wishing to submit methods for the determination of oxidation/decomposition or any other chemical change as a consequence of heating, should forward these to the Convener.

12. State of dryness?

ISO/TC 183 members were invited to submit any data on this matter to the Convener.

13. Working Group 9 agreed that members of ISO/TC 183 should examine the Japanese and Australian proposals for the determination of moisture in copper, lead and zinc concentrates, and provide written comments by September 30, 1986. The Convener will then prepare a combined document for moisture determination, taking into account Decisions 1 to 12 made at the meeting on April 29,1986, for future discussion by Working Group 9.

SAMPLE PREPARATION

Working Group 9 agreed that members of ISO/TC 183 should examine the Japanese and Australian proposals for sample preparation and provide written comments by September 30, 1986. The Convener will then prepare a combined document taking into account comments received and diagram 1 of ISO/TC 183 WG 9 N 4 E/F.

PRECISION AND BIAS

Working Group 9 agreed that the Convener would prepare separate documents on precision, bias and quality variation, which would be circulated to ISO/TC 183 members for comment.

NEXT MEETING

It was agreed that Working Group 9 would attempt to meet in approximately one year's time, the location to be decided by members.

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